



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,943	11/18/2003	Boris Y. Rozenoyer	FM-219J	4457

7590 01/13/2006

IANDIORIO & TESKA  
INTELLECTUAL PROPERTY LAW ATTORNEYS  
260 BEAR HILL ROAD  
WALTHAM, MA 02451-1018

EXAMINER
----------

MAI, NGOCLAN THI

ART UNIT	PAPER NUMBER
----------	--------------

1742

DATE MAILED: 01/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/715,943	<b>Applicant(s)</b> ROZENOYER ET AL.	
	<b>Examiner</b> Ngoclan T. Mai	<b>Art Unit</b> 1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 16 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 28,30-38,40,43 and 44 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 20-38,40,43 and 44 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

Art Unit: 1742

### **DETAILED ACTION**

1. The amendment filed 12/16/05 has been entered. The indicated allowability of claims 28, 30-38, 40 and 43-44 is withdrawn in view of the newly discovered reference(s) to Ritland et al. (U.S. Patent No. 6,338,906) and Lange et al. (U.S. Patent No. 5,167,271). The finality of previous action is withdrawn. Rejections based on the newly cited reference(s) follow.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

4. Claims 28 and 32-38 are rejected under 35 U.S.C. 102(a) as being anticipated by Ritland et al. (U.S. Patent No. 6,338,906).

Ritland et al disclose a method of making ceramic-metal composite by presintering a green body of ceramic particles to form a presintered body having porosity of from about 10 percent to about 50 percent (col. 10, lines 46-49) and pore size of 1 to 10 microns, (col. 12, l. 46-50), sintering the presintered body and infiltrating the sintered body with a metal to form a composite, wherein the metal matrix can be aluminum or magnesium and alloy thereof, col. 2, lines 57-60. In col. 8, lines 38-42. Ritland et al teach that the infiltration can be done without the use of substantial overpressure, which refers to pressure in excess of about 3 atmosphere. This implies that some pressure can be applied. Regarding the open porosity recited in claim 1, Ritland et al teach the composite is formed by infiltrating molten metal into a porous ceramic body having "substantially interconnected continuous pore structure or "open porosity. The examiner interprets it as having approximately 100% open porosity. Also that

Art Unit: 1742

the presintering reads on the claimed partly sintering ceramic particles. While Ritland et al do not teach the flexure strength in the amount recited by the claim, the presintered body disclosed by Ritland would inherently have the claimed flexure strength since the body can be made of the same material, alumina or silicon carbide (col. 8, lines 51-53) and formed by the same process, i.e., presintering the ceramic particles. "Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established, In re Best, 195 USPQ 430, 433 (CCPA 1977). 'When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not.' In re Spada, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). Therefore, the prima facie case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product. In re Best, 195 USPQ 430, 433 (CCPA 1977)."

As for claims 32-34 regarding the temperature stiffness retention, temperature strength retention and ultimate tensile strength of the metal matrix composite , it appears that the claimed properties are material properties. Consequently, the properties as recited in the instant claims would have inherently possessed by the teachings of the cited reference. Therefore, the burden is on the applicant to prove that the product of the prior art does not necessarily or inherently possesses characteristics attributed to the claimed product. In re Spade, 911 F.2d 705, 708, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990), In re Best, 195 USPQ 430 and MPEP § 2112.01.

As for claims 35-36 regarding the substantially pure ceramic and that it is of at 99.0% pure, Ritland et al teach the claimed limitation in col. 15, lines 21-23.

Regarding claim 37, since there is no chemical reaction between the metal and the ceramic matrix material disclosed by Ritland et al., the claimed limitation is inherently possessed by the material used in making the composite disclosed by Ritland et al.

***Claim Rejections - 35 USC § 103***

5. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ritland et al.

Ritland et al. disclose the metal matrix composite substantially as claimed. The difference between Ritland et al is that Ritland et al do not teach employing substantially pure aluminum.

Ritland et al however teach high-grade metal can advantageously selected depending on the intended application of the ceramic-metal composite material, col. 8, lines 62-65. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made if the ceramic-metal compositions material taught by Ritland et al are for use in an environment where high purity is required, that either or both of the infiltrant metal and ceramic can be employed so that not only they will not interfere with environment in which they are used but using them would produce high quality product. Determination of a preferred or an optimum purity of the metal powder used to obtain desire result is within the level of the skill artisan and would have been obvious.

6. Claims 30-31 and 43-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ritland et. al. in view of Lange et al. (U.S. Patent No. 5,167,271)

The difference between Ritland et. al. and the claims in that there is no teaching of subjecting the preform to molten metal under pressure such as by pressure casting or squeeze casting.

Lange et al teach infiltration ceramic preform with liquid metal can be done by capillary action with or without externally applied pressure. With that Lange et al teach externally applied pressure on the liquid metal to achieve the infiltration is preferred because the infiltration can be achieved under relatively short times and subsequent solidification takes place under externally applied pressure which results in a fine-grained metal microstructure free of shrinkage voids, Lange et al. col. 13, lines 4-20. Lange et al teach the infiltration under pressure by pressure casting and squeeze casting techniques, in col. 13, line 44-58. Thus it would have been obvious to modify the infiltration step disclosed by Ritland et


Art Unit: 1742

al. by applying pressure on the molten metal to speed up the infiltration process and provide a fine-grained metal microstructure free of shrinkage voids as taught by Lange et al.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ngoclan T. Mai whose telephone number is (571) 272-1246. The examiner can normally be reached on 9:30-6:00 PM Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Ngoclan T. Mai  
Primary Examiner  
Art Unit 1742

n.m.